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Logan

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[54] **KEY SAFE APPARATUS**

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[51] **Int. Cl.**[5] **E05B 11/00**

[52] **U.S. Cl.** **70/389**; 194/212; 211/9

[58] **Field of Search** 211/9; 70/388, 389, 70/441, 61; 194/212

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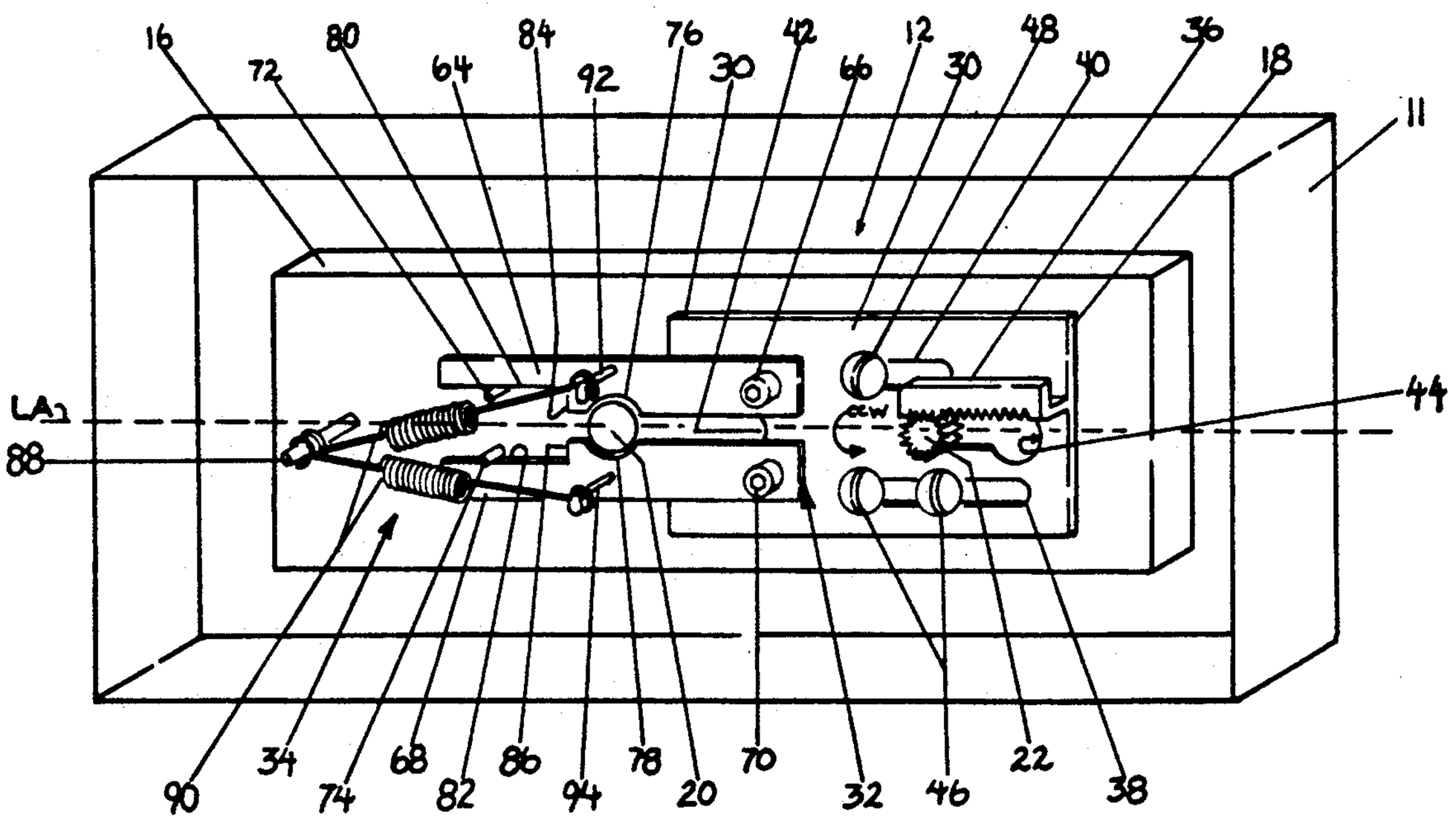
[57] **ABSTRACT**

An apparatus for alternately retaining a selected one of a pair of keys and releasing the other one of the pair of keys is provided. The retained key cannot be released until the other key is again disposed in a retained position. The apparatus includes a base plate having a pair of key receptacles, a slider member slidably mounted on the base plate, a visitor key having a pinion gear and a home key. The slider member includes a pair of key retaining slots for respectively retaining each key and a rack for driving engagement by the visitor key pinion gear for effecting sliding movement of the slider member in response to rotation of the visitor key pinion gear. A conventional key can be secured to the home key to control use of the conventional key through the selected release and retention of the visitor key and the home key.

3 Claims, 3 Drawing Sheets



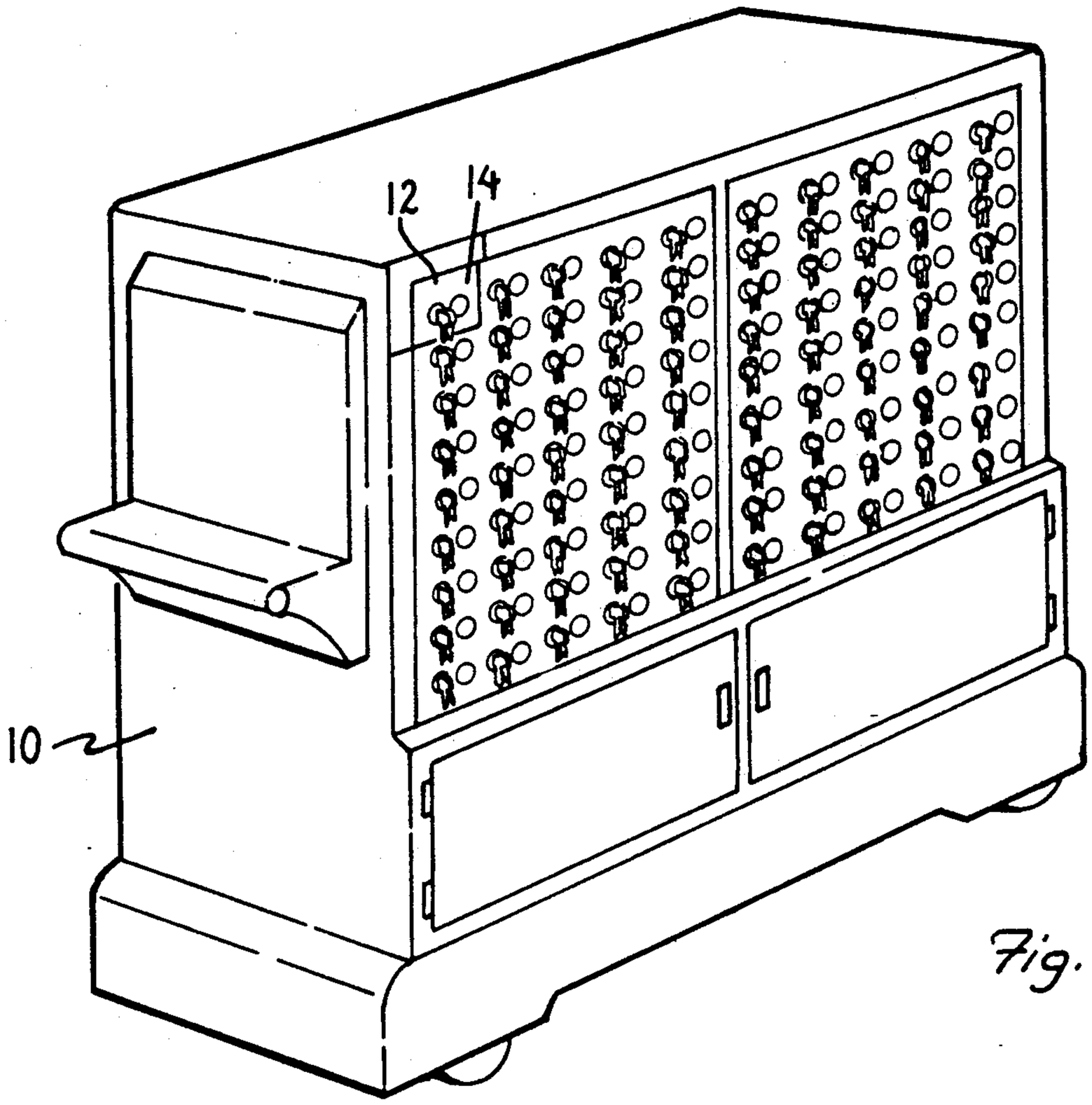


Fig. 1

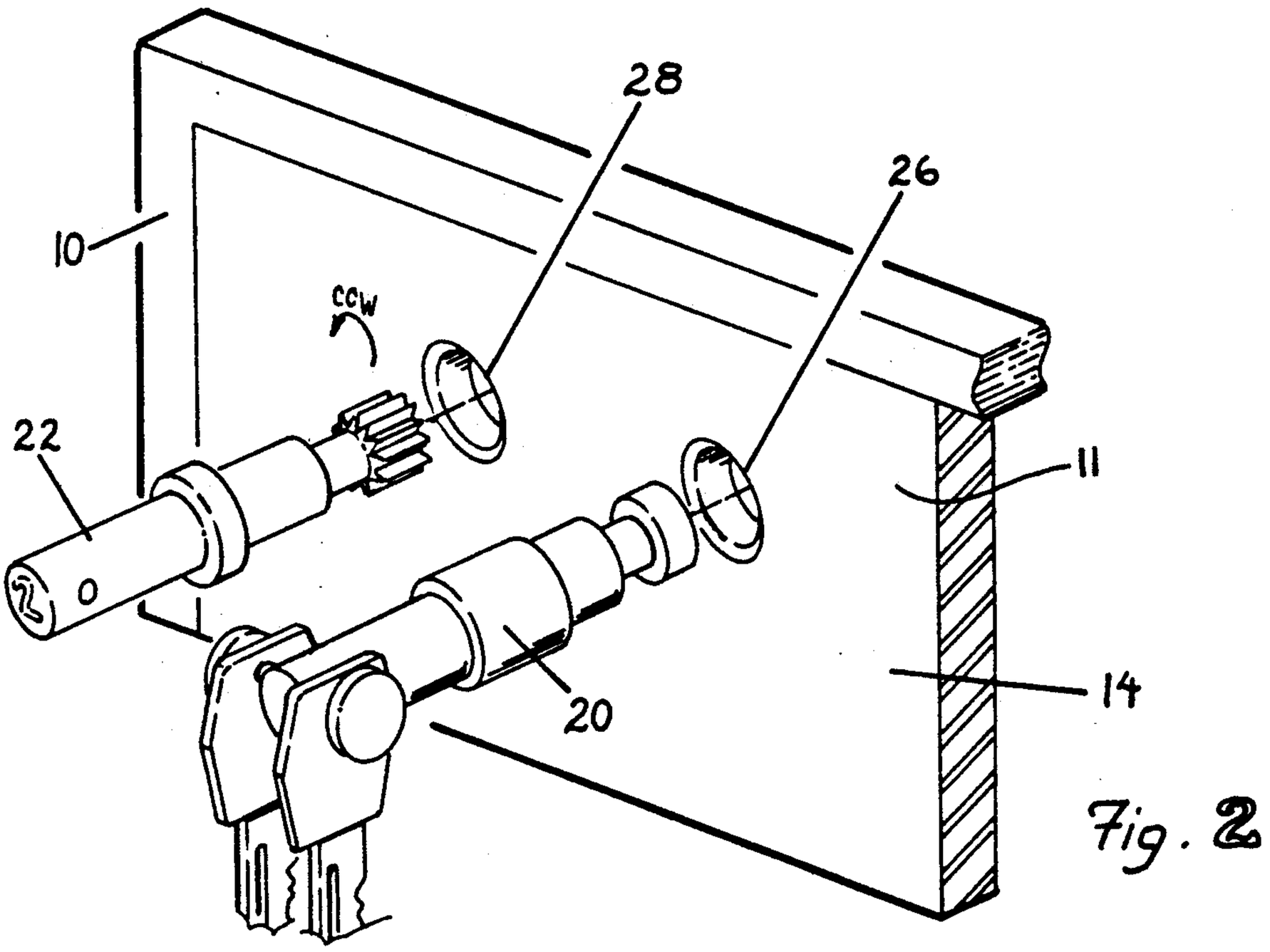
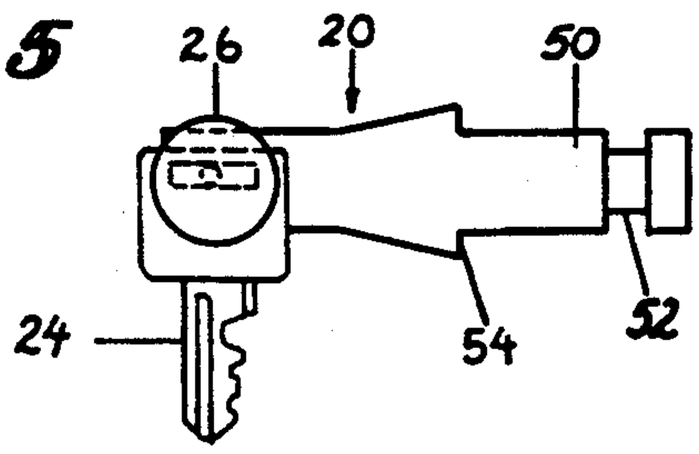


Fig. 2

Fig 5



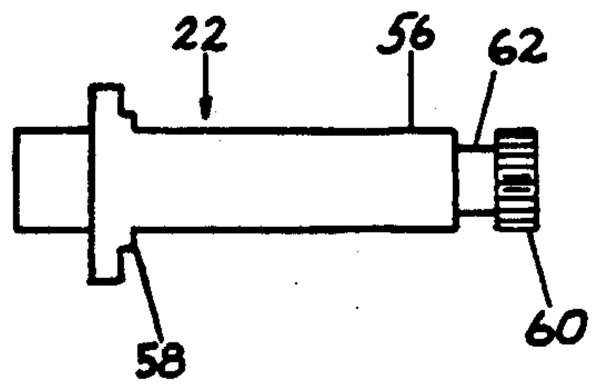


Fig 6

Fig 4

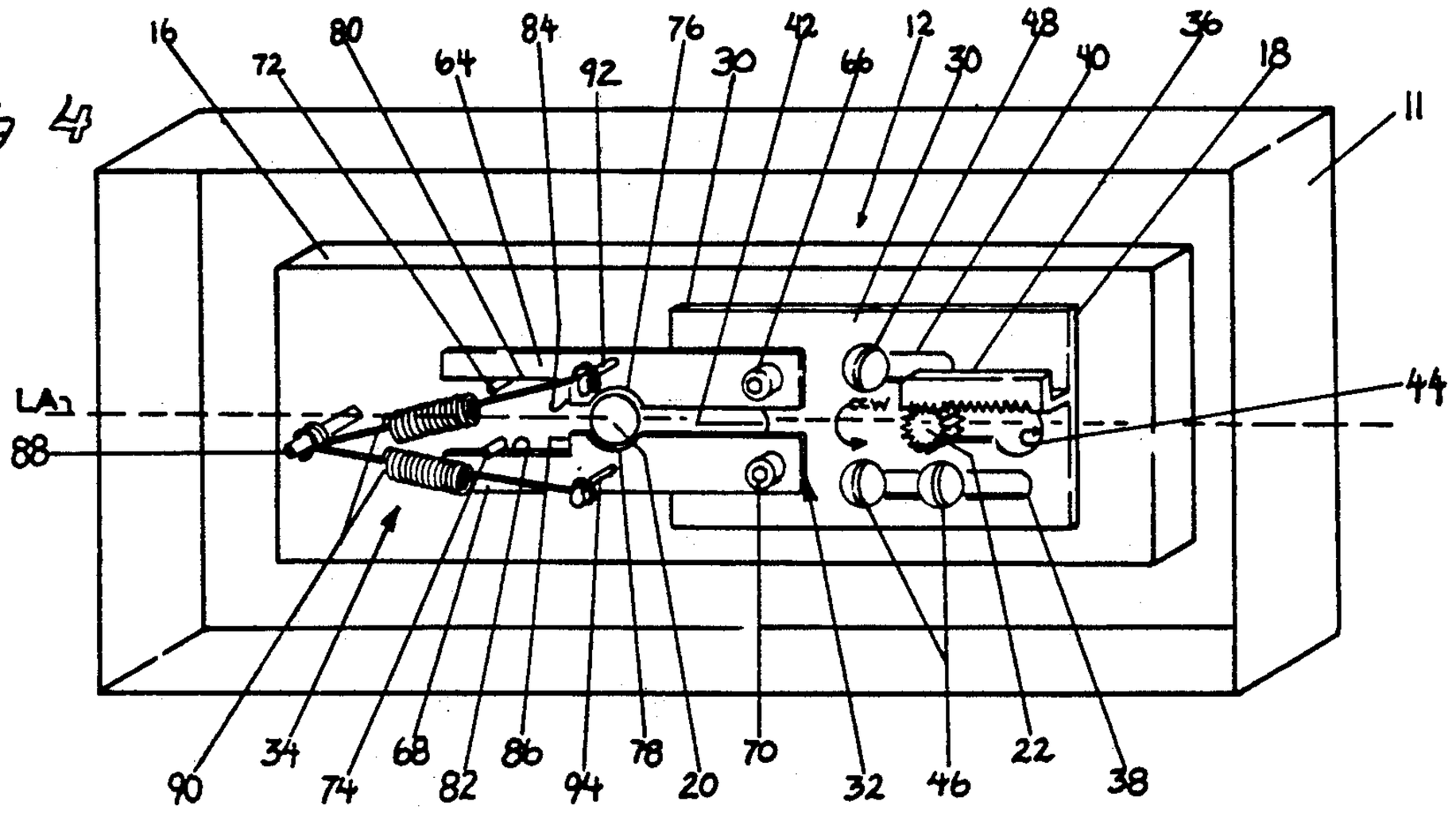
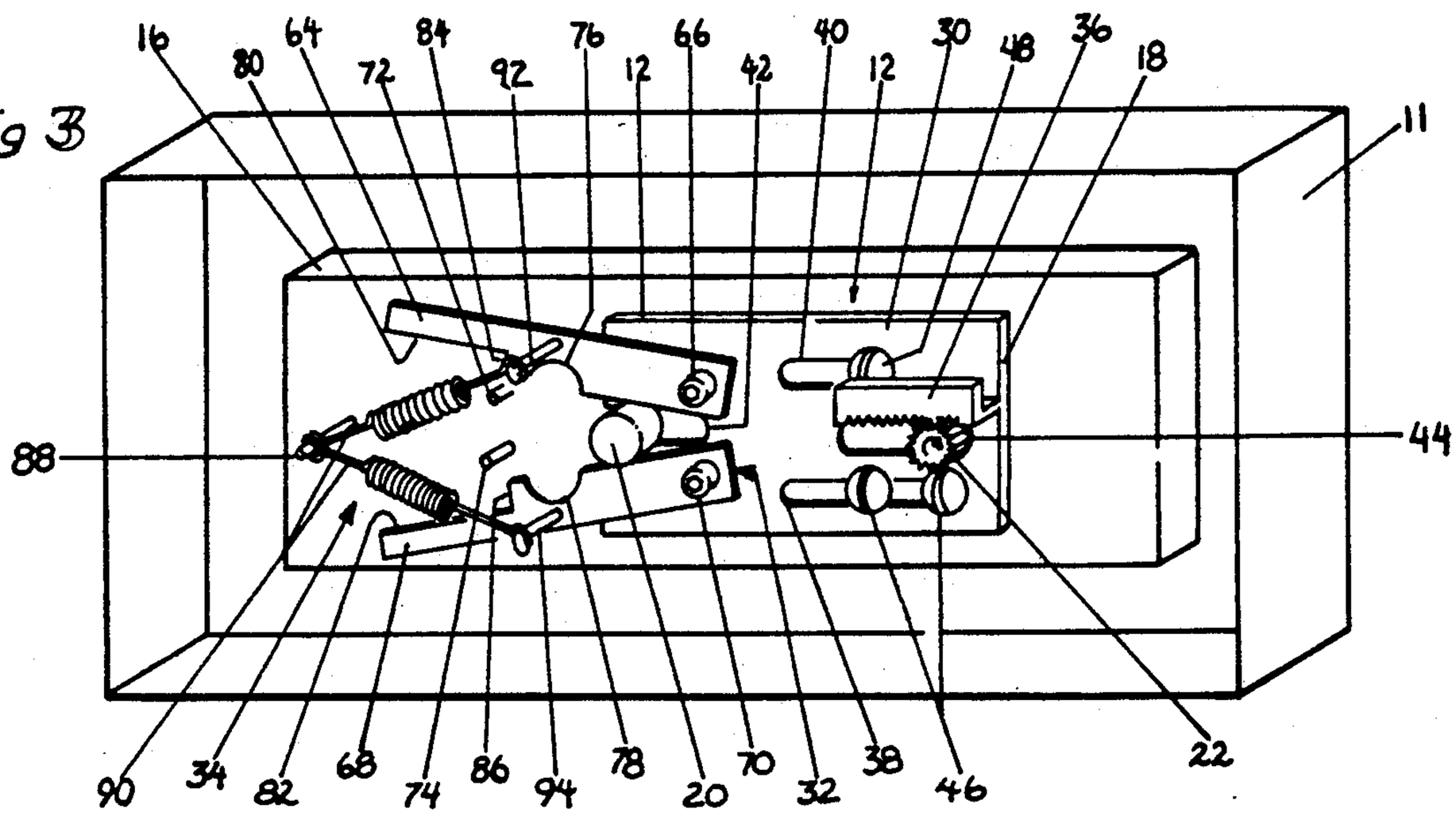


Fig 3



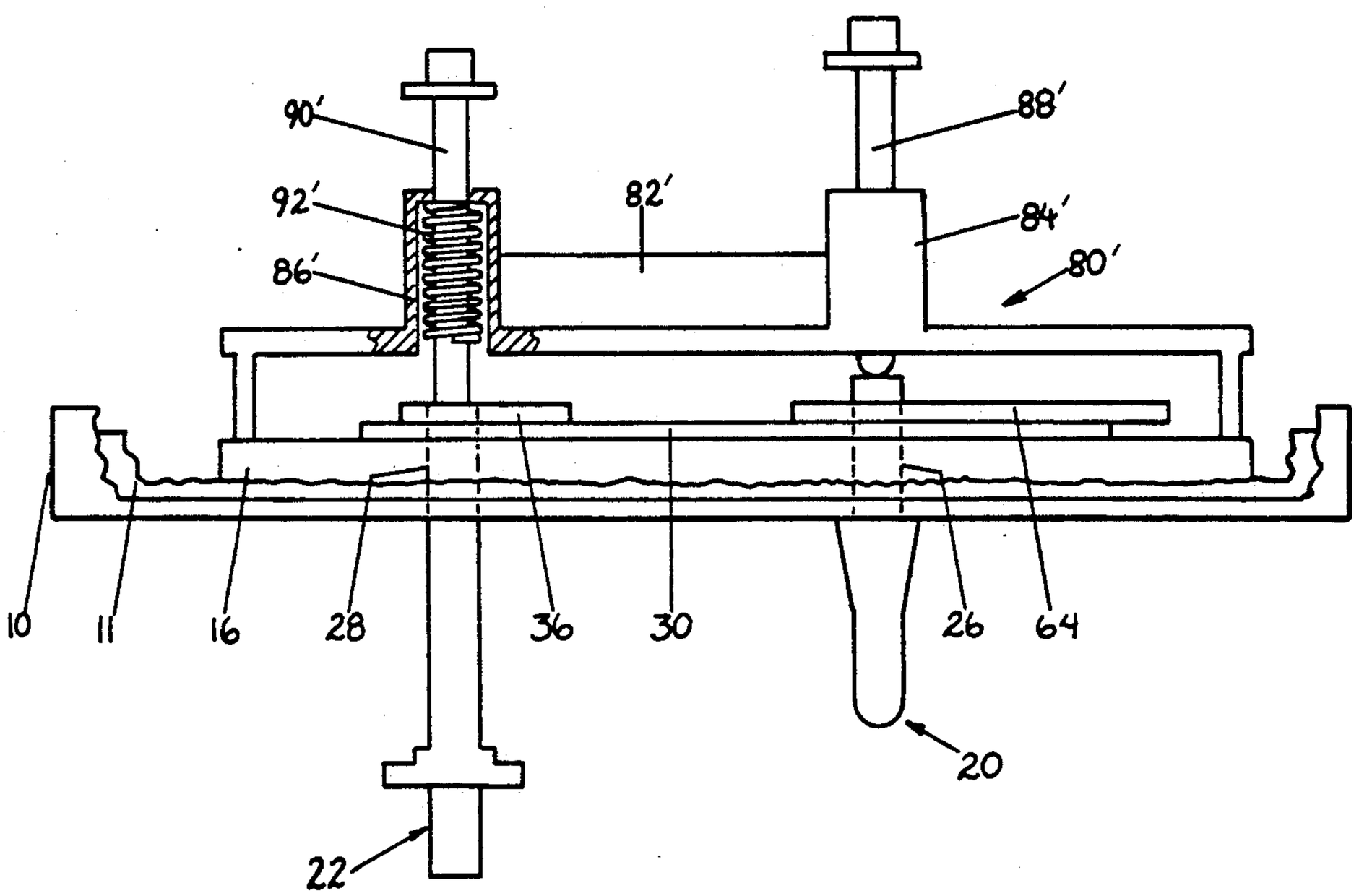


Fig. 7

KEY SAFE APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to a key safe apparatus and, more particularly, to an apparatus for alternately retaining a selected one of a pair of keys upon the release of the other key until the other key is again disposed in a retained diposition.

In organizations having inventory items, such as automobiles or other vehicles, which are each individually accessed and/or operated by a dedicated key, there is an acute need to maintain the keys in an orderly and organized manner, preferably in a central location, so that members of the organization, such as sales people and the like, can reliably and readily locate a key to conduct test drives, offer product demonstrations and conduct other activities with the individually accessible inventory item. In this regard, experience has shown that the approach of merely providing a central keyboard or keybox in which the keys are collectively stored soon undermines the goal of maintaining the keys in a readily retrievable disposition. For example, several of the key users are invariably delinquent in returning the "borrowed" keys to the central keyboard or keybox. Likewise, the key users often find it convenient to borrow several keys at once, thereby depriving others of the opportunity to make use of the borrowed keys unless the multiple key borrower is identified and contacted to obtain the desired keys.

Accordingly, the need exists for an apparatus which insures that a desired key will not be released to a potential key user unless some means of identification, such as the potential key user's own key, is automatically retained in response to the borrowing of the desired key. Additionally, the need exists for an apparatus for selectively releasing and retaining keys which only releases the key user's identification means, such as the user's own keys, upon disposition of the borrowed key in a key retained position.

SUMMARY OF THE INVENTION

The present invention provides an apparatus which insures that a desired key will not be released to a potential key user unless the potential key user's own key is relinquished for the duration of the use of the desired key.

Briefly described, the present invention provides a device for alternately locking a selected one of a pair of keys and releasing the other key for removal from the device. The device includes a home key normally locked in the device, a visitor key normally not locked in the device, lock base means defining a pair of key receptacles and locking means movable relative to the lock base means. Each key receptacle of the lock base means receives a respective one of the home and visitor keys. The locking means is movable between a first position locking the home key in its key receptacle and a second position releasing the home key for removal from its key receptacle. The locking means includes operating means, compatibly configured with the visitor key, for effecting movement of the locking means between its first and second positions in response to movement of the visitor key when received in its key receptacle and for locking the visitor key in its key receptacle in response to movement of the locking means into its second position.

According to the preferred embodiment of the device of the present invention, the home key includes a main body portion having a free insertion end and a portion, spaced from its free end, of reduced cross section, the visitor key includes a main body portion having a free insertion end, a portion, spaced from its free end, of reduced cross section, and a gear portion. Additionally, in the preferred embodiment, the locking means includes a slider member movably mounted to the lock base means for moving transversely to the key receptacles, a toothed rack secured to the slotted member and a slider member limit means.

Preferably, the slider member includes a home key slot having a width less than the cross sectional extent of the main body portion of the home key yet greater than the cross sectional extent of the reduced cross section portion thereof, and a visitor key slot having a narrow portion of a width less than the cross sectional extent of the main body portion of the visitor key yet greater than the cross sectional extent of the reduced cross section portion thereof, the narrow portion of the visitor key being adapted for selectively engaging the visitor key at its reduced cross section portion in a fork-like manner. Also, the slider member includes an enlarged portion having a width greater than the cross sectional extent of the main body portion of the visitor key.

Preferably, the toothed rack is configured for engagement by the gear portion of the visitor key. Also, the slider member limit means preferably includes a pair of pivot arms both pivotably mounted to the slide member, each pivot arm including a shoulder and a travel surface, a pair of stop pins mounted to the lock base means and means for biasing each pivot arm shoulder into engagement with their respective stop pin when the locking means is moved to the second position.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a cabinet supporting a plurality of identical units of one preferred embodiment of the key safe apparatus of the present invention;

FIG. **2** is an enlarged front perspective view of one unit of the preferred embodiment of the apparatus shown in FIG. **1**;

FIG. **3** is an enlarged rear perspective view of the preferred embodiment of the apparatus shown in FIG. **2**, showing the locking means of the apparatus in its first position for locking the home key of the apparatus in its key receptacle;

FIG. **4** is an enlarged rear perspective view of the apparatus shown in FIG. **2**, showing the locking means of the apparatus in its second position releasing the home key for removal from its key receptacle and locking the visitor key in its key receptacle;

FIG. **5** is a side elevational view of the home key of the apparatus;

FIG. **6** is a side elevational view of the visitor key of the apparatus; and

FIG. **7** is a top plan view, in partial section, of the unit shown in FIG. **2**, taken along lines VII—VII.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. **1**, a cabinet **10** is illustrated which supports a plurality of identical units of the preferred embodiment of the key safe apparatus of the present invention and a representative unit of the apparatus is generally designated as **12**. The identical units of the key safe apparatus

12 are arranged in horizontal rows and vertical columns with one another with the outer faces 14 thereof commonly forming a generally planar cabinet face.

With reference now to FIGS. 2–6, the structure and operation of each unit of the key safe apparatus 12 of the present invention will be described in further detail with respect to the key safe apparatus unit 11 in the upper left-hand corner of the cabinet 10, it being understood that the other key safe apparatus units are similarly configured and operated. The key safe apparatus 12 includes a lock base means, such as a base plate 16, a locking means, such as a slider member 18, a home key 20 and a visitor key 22. The visitor key 22 has a conventional key 24 secured thereto by a conventional key loop 26. In accordance with the present invention, the key safe apparatus 12 provides a means for controlling access to the conventional key 24 through selected release and retention of the home key 20 caused by the interrelated operations of the home key 20 and the visitor key 22. The conventional key 24 can be, for example, a key uniquely configured to lock and unlock an inventory item, such as an automobile. As will be described in more detail, each person desiring to gain access to a particular one of the conventional keys 24 is provided with one copy of the visitor key 22. The key safe apparatus 12 is adapted to alternately lock a selected one of the home key 20 and the visitor key 22 while simultaneously releasing the other key, whereby a person desiring to borrow a particular one of the conventional keys 24 must forfeit possession of his or her visitor key 22 until the home key 20 to which the particular conventional key 24 is secured is again returned to, and retained by, the cabinet 10.

The base plate 16 is a generally rigid, entry-resistant structure, such as, for example, a rectangular metal or high impact plastic plate, which is secured in flush relation to the back of the outer face 14 by welding or other appropriate securement means and the base plate 16 defines a pair of key receptacles 26, 28, the key receptacle 26 being adjusted for receiving the home key 20 and the key receptacle 28 being adapted for receiving the visitor key 22. The key receptacles 26, 28 are cylindrical throughbores extending through the base plate 16 and being laterally aligned with one another on a longitudinal axis LA of the base plate 16. The outer face 14 is provided with a pair of compatibly aligned throughbores, each such throughbore being aligned with a respective one of the key receptacles 26, 28 for permitting access of the home key 20 and the visitor key 22 through the outer face 14 into their respective key receptacles 26, 28.

The slider member 18 includes a generally rectangular metal or high impact plastic plate 30, a slider member limit means 32, a biasing means 34 and a toothed rack 36. The plate 30 includes a first mounting slot 38 extending longitudinally of the plate, a second mounting slot 40 spaced laterally of the first mounting slot 38 and extending generally parallel thereto, a home key retaining slot 42 and a visitor key retaining slot 44. The plate 30 is slidably mounted to the base plate 16 by a pair of first mounting bolts 46 inserted through the first mounting slot 38 and threaded into respective cooperatively located threaded bores in the base plate 16 and by a second mounting bolt 48 inserted through the second mounting slot 40 and threaded into a cooperatively located threaded bore in the base plate 16. As can be understood, the plate 30 is constrained by the first mounting bolts 46 and the second mounting bolts 48 to slide in a longitudinal direction with respect to the base plate 16—i.e., in substantial alignment with the longitudinal axis LA.

As best seen in FIG. 3 and 4, the home key retaining slot 42 is an openend rectangular slot extending longitudinally of the plate 30. The home key retaining slot 42 is located such that the home key 20 is received therein throughout the longitudinal sliding movement of the plate 30 relative to the base plate 16 when the key is inserted in its key receptacle 26. The visitor key retaining slot 44 includes a portion extending longitudinally of the plate 30 of generally uniform lateral extent transversely to its longitudinal extent and a cylindrical portion. The longitudinal portion extends from its one closed end in a direction away from the home key retaining slot 42 toward its other end, which is open and communicated with the cylindrical portion. The cylindrical portion has a diameter greater than the lateral extent of the longitudinal portion. The visitor key retaining slot 44 is located such that the visitor key 22 is received therein during the entire travel of the plate 30 with respect to the base plate 16 when the visitor key 22 is inserted into its key receptacle 28.

With reference to FIG. 5, the home key 20 includes a cylindrical portion 50 having an annular groove 52 formed therein adjacent the free end of the key and an annular shoulder 54 formed at the end of the cylindrical portion opposite its free end. The annular groove 52 has a diameter slightly less than the lateral extent of the home key retaining slot 42 transversely to the longitudinal extent thereof and the cylindrical portion 50 is of a diameter greater than the lateral extent of the home key retaining slot 42.

The spacing of the annular shoulder 54 from the annular groove 52 is selected such that the annular groove 52 is in alignment with the plate 30 when the home key 20 is sufficiently inserted into its key receptacle 26 to bring the annular shoulder 54 into abutment with the front face 14 of the cabinet 10. As can be understood, the plate 30 engages the home key 20 in a fork-like manner when the plate is moved such that the annular groove 52 is received in the home key retaining slot 42.

As seen in FIGS. 3 and 4, the toothed rack 36 is in the form of a conventional linear tooth rack of a rack and pinion gear type assembly and is rigidly fixed by welding or other appropriate securement means to the plate 30 with the teeth thereof extending longitudinally of the plate 30 and cooperatively located in parallel adjacent relation to the visitor key retaining slot 44. Specifically, the teeth of the toothed rack 36 are positioned for engagement by the visitor key 22 when the visitor key is inserted into its key receptacle 28. In this regard, the visitor key 22 includes a cylindrical portion 56 having an annular shoulder 58 formed at one end thereof and a pinion gear 60 formed at the other end thereof, as seen in FIG. 6. The pinion gear 60 is spaced from the annular shoulder 58 such that the pinion gear 60 extends slightly beyond the plate 30 for meshing engagement with the rack 36 when the visitor key 22 is inserted in its key receptacle 28 with the annular shoulder 58 in abutment with the outer face 14 of the key safe apparatus 12.

An annular groove 62 is formed inwardly of, and adjacent to, the pinion gear 60 and is of a diameter slightly less than the lateral extent of the longitudinal portion of the visitor key retaining slot 44. The outer diameter of the pinion gear 60 and the diameter of the cylindrical portion 56 of the visitor key 22 are each of a

diameter slightly greater than the lateral extent of the longitudinal portion of the home key retaining slot **44** but less than the diameter of the cylindrical portion of the slot.

As can thus be understood, the pinion gear **60** is adapted to engage the toothed rack **36** in well known rack and pinion manner to effect sliding movement of the plate **30** relative to the base plate **16** upon rotation of the visitor key **22**. Accordingly, the toothed rack **36** is positioned on the plate **30** such that the teeth of the pinion gear **60** engage the teeth of the toothed rack **36** when the visitor key **22** is inserted in its key receptacle **28** so that rack and pinion-type movement can be effected by rotation of the visitor key **22**.

The slider member limit means **32** includes an upper pivot arm **64** pivotally mounted to the plate **30** by a pivot **66**, a lower pivot arm **68** pivotally mounted to the plate **30** by a pivot **70**, an upper stop pin **72** and a lower stop pin **74**. The upper pivotal arm **64** and the lower pivot arm **68** are each formed with a semi-cylindrical recess **76**, **78**, respectively, a linear travel surface **80**, **82**, respectively, and a shoulder **84**, **86**, respectively. The pivot arms **64**, **68** are urged to pivot oppositely about their respective pivots **66**, **70** toward one another by the biasing means **34**. The biasing means **34** includes a post **88** projecting from the base plate **16** and located on the longitudinal axis LA, a pair of springs **90**, a spring attachment post **92** projecting from the upper pivot arm **64** and a spring attachment post **94** projecting from the lower pivot arm **68**. Each spring **90** is secured at one end to the post **88** and at its other end to a respective one of the spring attachment posts **92**, **94**. Since the post **88** is aligned with the key receptacles **26**, **28** on the longitudinal axis LA and the spring attachment posts **92**, **94** are laterally offset from the longitudinal axis LA in respective opposite directions, the springs **90** bias the upper pivot arm **64** to pivot counterclockwise (as viewed in FIGS. **3** and **4**) about its pivot **66** and the pivot arm **68** to pivot clockwise (as viewed in FIGS. **3** and **4**) about its pivot **70**. The stop pins **72**, **74** are each respectively laterally offset from the longitudinal axis LA at positions for engaging the respective travel surfaces **80**, **82** of the upper and lower pivot arms **64**, **68** for limiting the respective pivoting of the associated upper pivot arm **64** and lower pivot arm **68** toward one another caused by the urging of the biasing means **34**.

As shown in FIG. **4**, when the travel surface **80** of the upper pivot arm **64** is biased against the stop pin **72** by the biasing means **34**, the upper pivot arm **64** extends generally longitudinally with its semi-cylindrical recess **76** opening downwardly. Similarly, with the travel surface **82** of the lower pivot arm **68** biased in contact with the stop pin **74** by the biasing means **34**, the lower pivot arm **68** extends generally longitudinally with its semi-cylindrical recess **78** facing upwardly.

The operation of the key safe apparatus **12** will now be described with respect to FIGS. **3** and **4**. As shown in FIG. **3**, the home key **20** is normally inserted in its key receptacle **26** and the slider member **18** is disposed in a first position locking the home key **20** in its key receptacle **26**. Specifically, the plate **30** of the slider member **18** is disposed at its leftmost position (as viewed in FIG. **3**) with respect to the base plate **16** with the rightwardmost mounting bolt **46** and the mounting bolt **48** preventing further leftward travel of the slider member **18**. In this disposition of the slider member **18**, the cylindrical portion of the visitor key retaining slot **44** is generally aligned with the visitor key receptacle **28** and the home key retaining slot **42** receives the annular groove **52** of the home key **20** whereby the plate **30** engages the annular groove **52** of the home key **20** in a fork-like manner to prevent release of the key from the key safe apparatus **12**. In the first position of the slider member **18**, the upper pivot arm **64** is in contact with the home key **20**, which urges the upper pivot arm **64** away from the stop pin **72** against the urging of the biasing means **34**. Similarly, in the first position of the slider member **18**, the lower pivot arm **68** is in contact with the home key **20**, which urges the lower pivot arm **68** away from the stop pin **74** against the urging of the biasing means **34**. As can thus be understood, the home key **20** cannot be removed from the cabinet **10** since the plate **30** prevents axial movement of the home key **20**. Each of the home keys **20** illustrated in FIG. **1** are normally locked in the cabinet **10** in this manner by the key safe apparatus **12**.

If a person desires to remove a selected one of the home keys **20** for use of its particular conventional key **24** secured thereto, the person must possess one copy of the visitor key **22**, which are all of identical configuration. The person need only then insert his or her visitor key **22** into the visitor key receptacle **28** of the pair of key receptacles **26**, **28** associated with the selected home key **20**. As seen in FIG. **3**, since the cylindrical portion of the visitor key retaining slot **44** is aligned with the visitor key receptacle **28** when the slider member **18** is in its first position in which it locks the home key **20**, the visitor key **22** can be fully inserted into the key receptacle **28** until its annular shoulder **58** abuts the outer face **14**. The complete insertion of the visitor key **22** into its key receptacle **28** also brings the pinion gear **60** thereon into meshing engagement with the toothed rack **36** on the plate **30**. Accordingly, when the visitor key **22** is thereafter rotated about its axis, the pinion gear **60**, via its driving engagement with the toothed rack **36**, moves the plate **30** longitudinally relative to the base plate **16** in the right-hand direction as viewed in FIG. **3**.

When the visitor key **22** is rotated in a counterclockwise direction CCW (as viewed in FIG. **2**; i.e. clockwise as viewed in FIGS. **3** and **4**), the plate **30** is moved longitudinally (from left to right as viewed in FIGS. **3** and **4**) from its first position in which it locks the home key **20** to a second position releasing the home key **20** for removal from its key receptacle **26** and locking the visitor key **22** in its key receptacle **28**, as shown in FIG. **4**. Specifically, the plate **30** moves to the right (as viewed in FIG. **4**) relative to the base plate **16** and, during this movement, the visitor key retaining slot **44** moves relative to the visitor key **22** and the upper pivot arm **64** and the lower pivot arm **68** are urged by the biasing means **34** to pivot oppositely toward one another. As the visitor key retaining slot **44** moves relative to the visitor key **22**, the rectangular portion of the slot engages the annular groove **62** of the visitor key, to lock the visitor key with respect to the base plate **16**. That is, the interengagement of the plate **30** and the annular groove **62** of the visitor key **22** prevent axial movement—i.e., withdrawal—of the visitor key **22**. Thus, the visitor key **22** cannot be removed from its key receptacle **28** when the slider member **18** is disposed in its second position. The rightward movement of the plate **30** relative to the base plate **16** also causes the upper pivot arm **64** and the lower pivot arm **68** to travel tangentially across the home key **20**.

The pivotal mounting dispositions of the upper pivot arm **64** and the lower pivot arm **68** on the plate **30** is

such that the biasing means **34** pivots the arms **64, 68** during rightward sliding movement of the plate **30** to move their travel surfaces **80, 82** into engagement respectively with the stop pins **72, 74** and their respective semi-cylindrical portions **76, 78** into alignment with the home key **20** immediately after the left-hand end of the plate **30** has cleared the annular groove **52** of the home key **20**. Since the semi-cylindrical portions **76, 78** generally define a cylindrical opening therebetween of a larger diameter than the home key **20**, the home key **20** is thus released for removal from its key receptacle **26** and can be withdrawn by the key borrower for use of the conventional key **24** secured thereto.

To insure that the key borrower returns the home key **20** to its key receptacle **26**, the key safe apparatus **12** is configured to retain the visitor key **22** in its locked disposition in its key receptacle **28** when the home key **20** is released from its locked position in its key receptacle **26**. Specifically, as seen in FIG. **4**, attempted counterclockwise rotation (in the direction CCW shown in FIGS. **3** and **4**) of the visitor key **22** produces, via the toothed rack **36**, only very limited movement of the plate **30** in a leftward direction with respect to the base plate **16**. The limitation on the leftward movement of the plate **30** is accomplished by the plate movement limit means **32** as follows. With the semi-cylindrical recess **76** of the upper pivot arm **64** aligned with the home key receptacle **26**, the biasing means **34** continuously urges the travel surface **80** of the upper pivot arm **64** downwardly into contact with the stop pin **72**. Likewise, the biasing means **34** continuously urges the travel surface **82** of the lower pivot arm **68** into contact with the stop pin **74** when the semi-cylindrical portion **76** of the lower pivot arm **68** is aligned with the home key receptacle **26**. Accordingly, during any attempted leftward movement of the plate **30** via driving rotation of the pinion gear **60** along the toothed rack **36**, the biasing means **34** continuously maintains the upper pivot arm **64** in contact with the stop pin **72** and the lower pivot arm **68** in contact with the stop pin **74**. Accordingly, any leftward movement of the plate **30** immediately brings the shoulder **84** of the upper pivot arm **64** into abutment with the stop pin **72** and, at substantially the same time, brings the shoulder **86** of the lower pivot arm **68** into abutment with the stop pin **74**. The abutting contact between the shoulders **84, 86** and their respective stop pins **72, 74** prevents further leftward movement of the plate **30** relative to the base plate **16**.

The shoulders **84, 86** are spaced from the respective pivots **66, 70** of the pivot arms such that they move into abutment with the stop pins **72, 74** before the plate **30** can travel sufficiently for the plate to move out of engagement with the annular groove **62** of the visitor key **22**. Accordingly, when the home key **20** has been removed from its key receptacle **26**, the rotation of the visitor key **22** alone is not effective to release the plate **30** from its locking engagement with the annular groove **62** of the visitor key and the key cannot be withdrawn from the cabinet **10**. Thus, the key safe apparatus **12** of the present invention insures that the key borrower's copy of the visitor key **22** is always "relinquished" to permit release of the desired home key **20**. If desired, each copy of the visitor key **22** can be tagged or otherwise provided with an identification means so that the identity of the particular copy disposed in a given key receptacle **28** can be noted to determine the identification of the key borrower.

Once the key borrower has completed his or her use of the conventional key **24** of the borrowed home key **20**, the home key **20** is reinserted into its key receptacle **26**. If the plate **30** has, in the meantime, been moved relative to the base plate **16** since the release of the home key **20** such that the semi-cylindrical portions **76, 78** of the pivot arms are no longer in exact alignment with the visitor key receptacle **26**, the key borrower need only rotate the visitor key **22** until the semi-cylindrical portions **76, 78** are again brought into alignment with the home key receptacle **26**, thereby permitting the home key **20** to be fully inserted into its key receptacle. To then secure release of his or her copy of the visitor key **22**, the key borrower need only rotate the visitor key **22** in a clockwise direction to move the slider member **18** between its second position shown in FIG. **4** to its first position shown in FIG. **3**. During the movement of the slider member **18** between its second and first positions, the inserted home key **20** serves as a wedge or cam means between the upper pivot arm **64** and the lower pivot arm **68** to urge the upper pivot arm **64** and the lower pivot arm **68** to pivot in opposite directions away from one another against the urging of the biasing means **34**. Simultaneously with the opposite pivoting of the pivot arms, the left-hand movement of the plate **30** brings the plate into locking interengagement with the annular groove **52** of the home key **20** as the annular groove **52** is received in the home key retaining slot **42**.

In its role as a wedge means, the inserted home key **20** sufficiently pivots the upper pivot arm **64** in a clockwise direction and the lower pivot arm **68** in a counterclockwise direction for the pivot arms to clear the stop pins **72, 74** as the plate **30** continues its leftward movement relative to the base plate **16**. Thus, the continued clockwise rotation of the visitor key **22** eventually moves the plate **30** to the left sufficiently for the slider member **18** to reach its first position in which the cylindrical portion of the visitor key retaining slot **44** moves into alignment with the visitor key **22**, thus releasing the visitor key **22** for removal from its key receptacle **28**.

The key safe apparatus **12** of the present invention thus advantageously provides an apparatus for alternately locking a selected one of a pair of keys and releasing the other key for removal from the apparatus. Accountability for borrowed keys can be maintained since a key borrower must relinquish possession of his or her copy of the visitor key to effect removal of the home key. Likewise, the key borrower cannot regain possession of his or her copy of the visitor key until the borrowed home key has been returned to, and locked in, the key safe apparatus.

In FIG. **7**, a key plunger assembly **80'** is illustrated for urging the home key **20** and the visitor key **22** out of their respective receptacles **26, 28**. The key plunger assembly **80'** includes a body portion **82'** fixedly secured to the base plate **16** at a rearward spacing therefrom and having a pair of spaced, cylindrical bores **84', 86'**. Each cylindrical bore **84', 86'** movably retains therein a key plunger **88, 90'**, respectively, and each key plunger **88, 90'** is urged toward one axial direction in its respective cylindrical bore **84', 86'** by a spring **92'** (only one of which is shown) disposed intermediate the plunger **88, 90'** and its associated cylindrical bore.

The key plungers **88, 90'** are adapted to urge the home key **20** and the visitor key **22**, respectively, out of the respective key receptacles **26, 28**. To this end, the cylindrical bores **84', 86'** are aligned with the key receptacles **26, 28**, respectively, and the key plungers **88, 90'**

are formed of a rigid material for non-deformably contacting the free ends of the home key **20** and the visitor key **22** to urge the keys out of their key receptacles. The springs **92'** are selected with appropriate spring characteristics sufficient to cause outward axial movement of the free end of each key **20, 22** along the key receptacles **26, 28** yet insufficient to completely eject the keys. Thus, when the home key **20** is released upon movement of the slider member **18** into the second position (FIG. **4**), the plunger **88** assists the borrower in withdrawing the home key and, likewise, removal of the visitor key **22** is assisted by the plunger **90'** when the slider member **18** is thereafter returned to the first position (FIG. **3**).

It will therefore be readily understood by those persons skilled in the art that the present invention is susceptible of a broad utility and application. Many embodiments and adaptations of the present invention other than those herein described, as well as many variations, modifications and equivalent arrangements will be apparent from or reasonably suggested by the present invention and the foregoing description thereof, without departing from the substance or scope of the present invention. Accordingly, while the present invention has been described herein in detail in relation to its preferred embodiment, it is to be understood that this disclosure is only illustrative and exemplary of the present invention and is made merely for purposes of providing a full and enabling disclosure of the invention. The foregoing disclosure is not intended or to be construed to limit the present invention or otherwise to exclude any such other embodiments, adaptations, variations, modifications and equivalent arrangements, the present invention being limited only by the claims appended hereto and the equivalents thereof.

I claim:

1. A device for alternately locking a selected one of a pair of keys and releasing the other key for removal from the device, the device comprising:

a home key normally locked in the device, the home key including a main body portion having a free insertion end and a portion, spaced from its free end, of reduced cross-section;

a visitor key normally not locked in the device, the visitor key including a main body portion having a free insertion end, a portion, spaced from its free end, of reduced cross-section, and a gear portion;

lock base means defining a pair of key receptacles, one key receptacle for receiving the home key and the other key receptacle for receiving the visitor key; and

locking means movable relative to the lock base means between a first position locking the home key in its key receptacle and a second position releasing the home key for removal from its key receptacle, the locking means including:

a slider member movably mounted to the lock base means for moving transversely to the key receptacle, the slider member including a home key slot having a width less than the cross-sectional extend of the main body portion of the home key yet greater than the cross-sectional extent of the reduced cross-section portion thereof, a visitor key slot having a narrow portion of a width less than the cross-sectional extent of the main body portion of the visitor key yet greater than the cross-sectional extent of the reduced cross-section portion thereof, the narrow portion of the visitor key slot being adapted for selectively engaging the visitor key at its reduced cross-section portion in a fork-like manner, and an enlarged portion having a width greater than the cross-sectional extend of the main body portion of the visitor key,

a toothed rack secured to the slider member and being configured for engagement by the gear portion of the visitor key when the visitor key is received in its key receptacle for actuating movement of the slider member relative to the lock base means, the toothed rack being located relative to the visitor key slot such that the visitor key extends through the enlarged portion of the slider member when the locking means is in its first position locking the home key in its key receptacle and such that the narrow portion of the visitor key slot engages the reduced cross-sectional portion of the visitor key as the rotation of the gear portion of the visitor key along the toothed rack moves the slider member relative to the lock base means, the home key slot being located to release the home key therefrom as the slider member is moved relative to the lock base means to dispose the locking means in the second position, and

a slider member limit means cooperating with the home key to move between a non-stopping position when the locking means is in its first position and a stopping position when the locking means is in its second position for preventing movement of the slider member to a position in which the visitor key is released therefrom.

2. A device according to claim **1** and characterized further in that the slider member limit means includes a pair of pivot arms both pivotally mounted to the slider member, each pivot arm including a shoulder and a travel surface, a pair of stop pins mounted to the lock base means, means for biasing each pivot arm shoulder adjacent to a respective stop pin when the locking means is moved to the second position.

3. A device according to claim **1** and characterized further in that the main body portion of the home key and the main body portion of the visitor key are cylindrical and the key receptacles are cylindrically shaped for receipt therein of the cylindrical portions of the home key and visitor key.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 5,020,347

DATED : June 4, 1991

INVENTOR(S) : Karl P. Logan

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 4, Line 5, reads "openend" but should read -- open-end --.

Column 10, Line 3, reads "extend" but should read -- extent --.

Column 10, Line 15, reads "extend" but should read -- extent --.

Signed and Sealed this

Twenty-second Day of December, 1992

Attest:

DOUGLAS B. COMER

Attesting Officer

Acting Commissioner of Patents and Trademarks